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Documentation of Active Peregrine Falcon Nest Sites

1 Oct 1994–31 March 1998

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SUMMARY

We monitored the abundance and productivity of peregrine falcons (*Falco peregrinus*) along the Sagavanirktok River in northern Alaska from 1995 through 1998 and along the Tanana River in Interior Alaska in 1995 and 1996. Population monitoring began on these rivers in 1979, and they were subsequently established as representative study areas in the Peregrine Falcon Recovery Plan – Alaska Population (US Fish and Wildlife Service 1982). Peregrine populations in these study areas increased throughout the 1980s and 1990s, reaching numbers higher than the goals set in the Recovery Plan. In 1994, the arctic peregrine falcon (*F. p. tundrius*) was delisted by the US Fish and Wildlife Service (Swem 1994). The American peregrine falcon (*F. p. anatum*) that nests along the Tanana River was proposed for delisting in 1998 (Mesta 1998).

On the Sagavanirktok River, the number of pairs of peregrines increased from 18 in 1995 to 27 in 1998. The number of young produced per pair ranged between 1.33 and 2.48 in the same period, with a high of 62 young produced in 1997. A falconry harvest of nestling arctic peregrines for falconry was initiated in 1996. Three nestlings were taken in 1996 from the Sagavanirktok, 2 in 1997, and 2 in 1998.

On the Tanana River, we observed 34 pairs in 1995 and in a single visit to the study area in 1996 found 27 pairs. Productivity was studied only in 1995, when 26 successful pairs with 71 young were observed.

Key Words: *Falco peregrinus*, monitoring, nesting, peregrine falcon, productivity, Sagavanirktok River, Tanana River.

CONTENTS

BACKGROUND

The peregrine falcon (*Falco peregrinus*) is a well-known endangered species that suffered drastic declines and extirpations in Europe and North America during the 1960s as a result of pesticide contamination (Hickey 1969, Cade et al. 1988). Populations of 2 of the 3 subtaxa in Alaska (White 1968) declined significantly and were listed as endangered in 1973. The American peregrine falcon (*F. p. anatum*) nests in boreal and temperate forest regions and is classified as endangered by the federal government but was proposed for delisting by the US Fish and Wildlife Service in 1998 (Mesta 1998). The arctic peregrine falcon (*F. p. tundrius*) breeds in tundra regions. It was reclassified from endangered to threatened status by federal authorities in 1984 and delisted effective 4 October 1994 (Swem 1994). Both the American and arctic peregrine falcons were removed from the Alaska State Endangered Species List in 1993 and placed on the Alaska Department of Fish and Game (ADF&G) list of Species of Special Concern. Peale's peregrine falcon (*F. p. pealei*), the third subtaxon in Alaska, lives in coastal regions of the state from the Aleutians south through the Gulf of Alaska and southeastern Alaska and has never been classified as threatened or endangered. Unlike the first 2 subtaxa that are long-distance migrants, wintering as far south as Argentina, Peale's peregrines are year-round residents of Alaska or short-distance migrants along the west coast of North America.

As part of a national program to restore peregrine falcon populations, the US Fish and Wildlife Service (FWS) established the Alaska Peregrine Falcon Recovery Team to develop a recovery plan for American and arctic peregrine falcons (US Fish and Wildlife Service 1982). The plan recognized the importance of monitoring population trends, identifying nesting habitats and prey species, and protecting nesting areas from incompatible human activities. The recovery plan established 4 representative study areas (2 areas for each subtaxon) to monitor the status and recovery of the peregrine falcon in Alaska. The representative areas for the delisted arctic peregrine falcon are the Colville and Sagavanirktok rivers. The representative areas for the endangered American peregrine falcon are the Tanana and upper Yukon rivers. The FWS and the Bureau of Land Management (BLM) assumed responsibility for surveying all areas from 1979 to 1990. With funding provided by FWS, since 1991 the Alaska Department of Fish and Game (ADF&G) has assisted in monitoring the populations on the Sagavanirktok and Tanana rivers.

Roseneau et al. (1981) summarizes the early history of numbers and occupancy of peregrine falcons on the Sagavanirktok and Tanana rivers. Intermittent surveys from the late 1960s through the 1970s show the number of peregrines declined to 1 pair on the Sagavanirktok River in 1976 and just 2 lone adults and no pairs on the Tanana River in 1976. Annual monitoring of each study area began in 1979. As the populations recovered, the number of active territories and the area occupied along each river increased. Survey coverage was broadened over the years to include the growing population.

For the Sagavanirktok River, survey coverage has changed considerably over the years. Before 1991, Franklin Bluffs, Sagwon Bluffs, and a few isolated sites (e.g., Ice Cut, Happy Valley) were the only areas regularly surveyed along the river. The other portions of the river were not studied because they were not thought to contain suitable nesting habitat. During the late 1980s observations of nesting peregrines along many rivers of the central North Slope (Robert Ritchie, pers. commun.) suggested that peregrines might be nesting along the unsurveyed areas of the Sagavanirktok River. Beginning in 1991 a concerted effort was made to survey the entire river below 2000 ft elevation. Survey coverage increased from approximately 40 km along the river to 160 km. The increase in occupied sites observed in 1991 was largely the result of increased survey effort, yet during the same time population recovery was also contributing to the increased number of occupied sites.

For the Tanana River survey, coverage is much more comparable throughout the years. In 1985 the survey area was extended 50 km upstream of Tanacross to include a newly found pair at the Tok River. In 1992 we extended the survey area downstream from Fairbanks to Nenana (100 km) to include 2 historic nest sites that were not part of earlier surveys and upstream an additional 15 km to start at the Tetlin Bridge, approximately 16 km east of Tok.

OBJECTIVES

The field study objectives for peregrine falcons in 1995 to 1998 were the following:

1 Locate nesting territories
2 Determine productivity

STUDY AREA AND METHODS

The study areas were along the Sagavanirktok River in northern Alaska and the Tanana River in central Alaska (Fig. 1). In 1995, 2 surveys were conducted on both rivers, but in subsequent years only 1 late season survey (in late July-early August during the nestling period) was conducted on the Sagavanirktok, and the Tanana was only surveyed in 1996 with a single survey early in the season during the incubation period (Table 1). ADF&G staff have not participated in peregrine surveys on the Tanana River since 1996. On the first survey during the early nesting period we determined the number of birds attempting to breed in the area. On the second survey during the mid to late nesting period, we determined the number of pairs successful in rearing young. We visited nest sites during the second survey to band young.

In our surveys, we look for nesting pairs on steep soil banks, gravel exposures, rock cliffs, and similar habitats. Whenever possible we stop on an island, sandbar, or riverbank to obtain a frontal view of the habitat. However, in many circumstances we must make our observations while floating past a nesting area.

We look for perched or flying birds or evidence of nest sites by carefully checking the bluff or cliff with binoculars or spotting scopes. We use a Field Model Questar spotting scope (65x magnification) to view nest ledges from a distance to avoid disturbing the birds. It is common to document occupancy by finding incubating birds with the Questar scope. Since peregrines respond vocally to intruders in their nesting areas, listening for defensive calls or courtship calls is an important survey technique in suitable conditions. Wind, rain, river noise, or other loud noises often obscure faint or distant calls of the birds. Climbing the area is sometimes necessary to help locate birds or their nest sites. If birds are present, our activities are performed quickly to minimize disturbance to nesting pairs. If birds are not located, we remain in the area as long as possible to detect birds as they become conspicuous in their normal activities. The FWS recommends a minimum of 4 hours observation before assuming a site is unoccupied; however, this is sometimes not achieved at potential nest locations because of the large area to be surveyed in a short time. When peregrine falcons are observed, the exact location is plotted on photographs or maps of the area.

During the second survey we climb to nest sites using standard rock climbing techniques. We count and band nestlings. Nestlings are banded with FWS lock-on aluminum leg bands on the right leg and an auxiliary marker color band on the left leg. The color band is an anodized aluminum, riveted leg band that has an engraved alphanumeric code. Two colors are used following the protocol developed by the FWS: arctic peregrine falcons are banded with blue bands and American peregrine falcons are banded with black bands. The engraved code on the color band is large enough to be read with a powerful spotting scope. We use the Questar scope to read the color-band codes on previously banded birds.

Each nesting area or area of potential nesting habitat is photographed with a 35 mm camera to prepare an atlas of nesting sites. The photographs are taken to show a distant view of the general landform, as well as a series of overlapping close-up views to show detail of the exact nest location. Most of the photography is completed in June and additional observations of peregrines are recorded on the photographs during the second survey.

All nesting locations are recorded on 1:63,360- and 1:250,000-scale US Geological Survey maps. Numbers, productivity, nesting status, activities, and nest-site characteristics are recorded on Raptor Observation Record Cards developed for the Alaska Raptor Database used by FWS. The maps, cards, banding data, and samples are filed with FWS Endangered Species Branch, Ecological Services, Fairbanks, Alaska.

SAGAVANIRKTOK RIVER

The Sagavanirktok River is a glacial river that flows northward from the Brooks Range to the Arctic Ocean in the central North Slope of Alaska. The study area includes the main river from the foothills near Slope Mountain in the southern portion of the drainage to the north end of Franklin Bluffs near the river delta at Prudhoe Bay. Peregrine falcon nesting habitat along the river ranges from large cliff exposures to less prominent soil and gravel banks. Sites along the Sagavanirktok River were reached by ADF&G staff using 3 methods, 1) by raft or canoe on the river, 2) on foot from the Dalton Highway, and 3) by fixed-wing aircraft.

TANANA RIVER

The Tanana River is a glacial river flowing westward through the Tanana Uplands of Interior Alaska. The study area includes the Tanana River from the Tetlin Bridge, approximately 16 km east of Tok, to Nenana, excluding the section between the Salcha River and Fairbanks that lacks suitable nesting habitat. Surveys were conducted by ADF&G staff using a 20-ft outboard jet-powered riverboat that allowed boating along the shallow channels common in this braided, glacial river.

RESULTS AND DISCUSSION

SURVEY COVERAGE

In northern Alaska we surveyed 160 km of the Sagavanirktok River. The marginal habitat in the foothills south (upstream) of Slope Mountain Department of Transportation Maintenance Station was not surveyed. The southern area was last surveyed in 1991. In 1998, we surveyed an additional 20 km at the northern end of Franklin Bluffs.

In Interior Alaska we surveyed 418 km of the Tanana River, from the Tetlin Bridge to Salcha and specific sites near Nenana.

PAIRS OF PEREGRINE FALCONS

In the Sagavanirktok River study area, the number of pairs of peregrines increased from 18 to 27 during 1995-1998 (Table 2, Fig. 2). An additional 2 to 6 lone adults were seen each year. Table 3 summarizes the history of occupancy and productivity on the Sagavanirktok River. The number of pairs in 1997 (25) and 1998 (27) exceeded the previous high number (23) counted in 1992 and 1993. The numbers reported for 1996-1998 represent minimal counts because only a single survey was conducted in those years, compared with 2 surveys in prior years.

In the Tanana River study area, 34 pairs were observed in 1995 and 27 were counted in a single early season survey in 1996 (Table 4). An additional 3 lone adults were seen in 1995 and 7 lone adults were observed in 1996. The history of the number of pairs and lone adults on the Tanana is

summarized in Table 5. The number of pairs increased consistently through 1995 (Fig. 3). The 1996 count is not directly comparable because only a single May survey was conducted, rather than 2 surveys (May and July).

PRODUCTIVITY

Sagavanirktok River

In the Sagavanirktok River study area, the number of successful pairs increased from 13 in 1995 to 23 in 1997 and declined to 16 in 1998. The number of young produced also peaked in 1997, at 62, well above the previous high of 39 in 1996. Forty-four young were produced in 1998.

The remarkably high number of young produced in 1997 was due to the large percentage of pairs that were successful rearing young (92%, 23 of 25 pairs) combined with an above average number of young per successful pair (2.70). In 1998, the number of young produced per successful pair was high (2.75), but far fewer pairs were successful (59%, 16 of 27). Since 1991 when the current effort to completely survey the Sagavanirktok River was initiated, an average of 72% of pairs each year have successfully raised young with a mean of 2.43 young per successful pair.

Tanana River

In 1995 in the Tanana River study area, 26 successful pairs produced a minimum of 71 young (Table 4). Eight pairs failed to produce young to banding age. The number of young is a minimum value because we were unable to count the nestlings at one site. Productivity averaged 2.73 young per successful nest and 2.09 young per total pairs (Table 5). A second survey during the nestling period was not conducted in 1996, therefore no information is available for that year.

Table 5 summarizes the history of productivity on the Tanana River. The number of successful pairs increased from 19 in 1993 to 24 in 1994 and 26 in 1995. In 1994, the increase in successful pairs and the high productivity of pairs resulted in the highest production of young (n = 74) ever recorded on the Tanana River. The previous high of 62 young occurred in 1993. From 1990-1995, an average of 73% of pairs have successfully raised young each year, with a mean of 2.10 young per total pairs and 2.85 per successful pair.

FALCONRY HARVEST

Following the delisting of arctic peregrines in 1994, regulations were passed in Alaska permitting a limited harvest of nestling peregrines from within the nesting range of arctic peregrines. In 1996, 3 nestlings were taken from the Sagavanirktok River, and 1 was taken from coastal NW Alaska. In 1997 and 1998, 2 nestlings were taken each year from the Sagavanirktok River.

CONCLUSIONS AND RECOMMENDATIONS

Peregrine falcons are widely distributed and locally common along the Sagavanirktok and Tanana River study areas. Since complete survey coverage of the Sagavanirktok River was initiated in 1991, the number of pairs of peregrines increased sharply from 1991-1992, leveled off and declined in 1993-1994, and has consistently increased from 1995-1998. Record high numbers of young were produced in 1997, and the second highest production of young was observed in 1998. On the

Tanana River, the number of pairs continued to increase through 1995 (the single survey in 1996 did not provide comparable data). Production on the Tanana also continued at a high rate in 1995.

Monitoring of delisted endangered species is suggested for at least 5 years. With harvest by falconers of arctic peregrines initiated in 1996, and proposals for harvest of American peregrines tied to delisting of that subspecies in the near future, we recommend the surveys on the Sagavanirktok and Tanana rivers be continued for at least 5 years following delisting.

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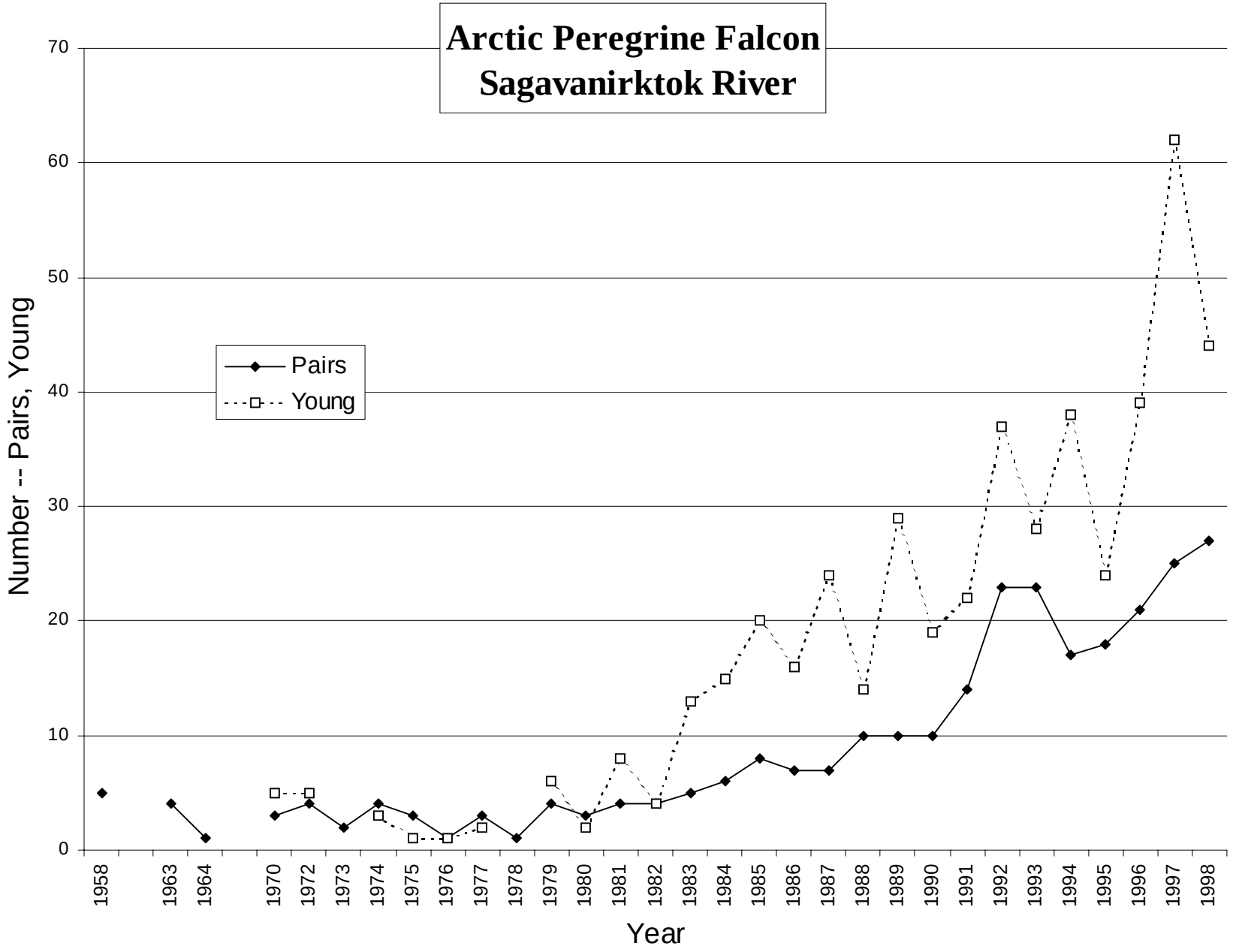

Figure 2 Number of pairs and young of arctic peregrine falcons, Sagavanirktok River, northern Alaska, 1958-1998

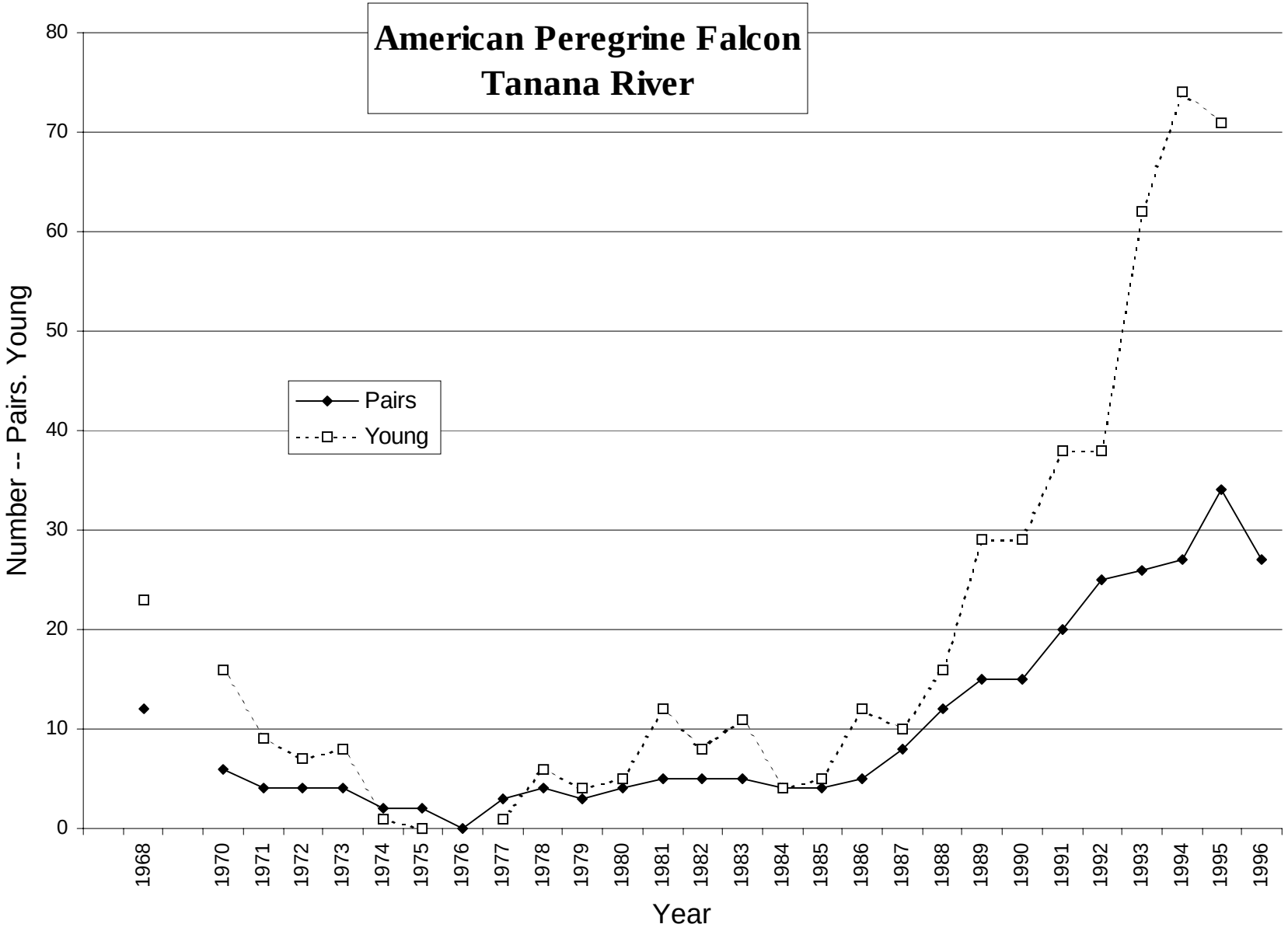

Figure 3 Number of pairs and young of American peregrine falcons, Tanana River, Interior Alaska, 1968-1996

Table 1 Surveys of peregrine falcons on the Sagavanirktok and Tanana rivers, Alaska, 1995–1998

River	Year	Number of Surveys
Sagavanirktok River	1995	2
	1996	1 (July-August)
	1997	1 (July-August)
	1998	1 (July-August)
Tanana River	1995	2
	1996	1 (May)

Table 2 Occupancy and productivity of Arctic Peregrine Falcons at sites on the Sagavanirktok River, Alaska, 1995–1998. [blank = not visited; V = vacant; L = lone adult; F = failed pair; S = successful pair, number = number of young; U = unknown]

Location	1995	1996	1997	1998
Slope Mountain	V	V		S 3
SAGA081.5	F	L	S 3	F
SAGA089.0-089.5		V	V	V
SAGA091.0		V	V	V
SAGA095.2	V	V	L	V
SAGA097.5			V	L
SAGA099.0-099.2	S 2	F	S 2	V
SAGA100.0			V	V
SAGA101.8	S 3	S 2	S 4	F
SAGA105.0	V	V	S 2	F
SAGA110.0-110.5	S 2	S 3	S 3	S 2
SAGA116.0	F	S 3	S 1	S 3
SAGA123.4-123.5	S 2	S 3	S 3	V
SAGA126.6		V	V	F
SAGA136.0	S 2	L	V	S 2
SAGA138.8		V	V	V
SAGA143.8-143.9	S 2	F	S 3	F
SAGA146.0-146.4		V	S 2	S 3
SAGA147.0-147.1	L	S 3	V	V
SAGA147.5			S 1	S 3
SAGA150.5-150.6	S 2	S 4	S 3	S 2
SAGA157.0	S 1	S 3	S 4	S 4
SAGA157.8-158.0	S 1	S U	S 2	S 2
SAGA158.5		S U	V	V
SAGA158.8-159.5	S 2	L	S 3	S 4
SAGA185.0		V	V	V
SAGA187.5-187.8	F	F	F	F
SAGA191.9		S 4	S 4	V
SAGA193.0-193.5		S 2	S 2	F
SAGA196.0-196.8		L	V	S 2
SAGA197.6-197.9	F	V	V	S 3
SAGA198.0-198.3		L	F	F
SAGA198.5-198.9		S 1	S 1	V
SAGA200.0	S 2	S 3	S 2	F
SAGA203.0	S 2	F	S 3	V
SAGA204.5-205.2	L	L	V	L
SAGA205.7		F	S 3	V
SAGA207.0-207.1	S 1	S 2	L	S 4
SAGA208.7	F	S 3	S 4	S 2
SAGA217.0	V	S 3	S 3	F
SAGA221.0			S 3	V
SAGA222.0				S 3
SAGA235.0				L
TOTALS				
L (Lone adult)	2	6	2	3
F (Failed pair)	5	5	2	11
S (Successful pair)	13	16	23	16
Number of young	24	39	62	44

Table 3 Historical occupancy and productivity of peregrine falcons, Sagavanirktok River, Alaska, 1958–1998[a]

	Occupancy			Productivity		
Year	Lone adults	Total pairs	Successful pairs[b]	Number of young[b]	Young per total pair	Young per successful pair
1958	0	5	U	U	--	--
1963	0	4	U	U	--	--
1964	0	1	U	U	--	--
1970	0	3	2	5	1.67	2.50
1972	1	4	2	5	1.25	2.50
1973	0	2	U	U	--	--
1974	1	4	2	3	0.75	1.50
1975	0	3	1	1	0.33	1.00
1976	0	1	1	1	1.00	1.00
1977	0	3	1	2	0.67	2.00
1978	0	1	U	U	--	--
1979	0	4	3	6	1.50	2.00
1980	1	3	1	2	0.67	2.00
1981	0	4	3	8	2.00	2.67
1982	0	4	2	4	0.67	2.00
1983	0	5	5	13	2.60	2.60
1984	1	6	6	15	2.50	2.50
1985	0	8	6	20	2.50	3.33
1986	0	7	6	16	2.29	2.67
1987	2	7	6	24	3.43	4.00
1988	0	10	6	14	1.40	2.33
1989	1	10	10	29	2.90	2.90
1990	2	10	7	19	1.90	2.71
1991	6	14	11	22	1.57	2.00
1992	2	23	15	37	1.60	2.47
1993	4	23	11	28	1.22	2.55
1994	4	17	14	38	2.24	2.71
1995	2	18	13	24	1.33	1.85
1996	6	21	16	39	1.86	2.44
1997	2	25	23	62	2.48	2.70
1998	3	27	16	44	1.62	2.75

[a]Data for 1958–1978 from a review by Roseneau et al. 1981. Data for 1979-1990 from US Fish and Wildlife Service, Endangered Species, Fairbanks unpublished summaries. Data for 1991–1994 from Bente and Wright 1992, 1993, 1994, and 1995. [b]U = Unknown

Table 4 Occupancy and productivity of American Peregrine Falcons at sites on the Tanana River, Alaska, 1995–1996. [blank = not visited; V = vacant; L = lone adult; F = failed pair; S = successful pair, number = number of young; P = pair; U = unknown]

Location	1995	1996
AKHY1275.2	S 2	
TANA093.5	F (2eggs)	
TANA103.2	S 3	P
TANA135.5	F	V
TANA181.7	S 3	L
TANA188.0	L	V
TANA205.0	S 3	P
TANA210.7	S 4	P
TANA221.5	S 2	P
TANA232.5	S 2	
TANA236.5	V	
TANA243.0	S 3	P
TANA244.5		V
TANA246.0	F	V
TANA247.5	S 2	P
TANA258.5	S 3	L
TANA269.5	S 3	P
TANA273.0	F	V
TANA280.0	S 2	P
TANA281.6	S 2	L
TANA283.5		P
TANA288.5	S 3	P
TANA299.0	S 2	L
TANA320.5	S 3	P
TANA337.0	F	V
TANA338.5	S 4	P
TANA372.0		P
TANA376.0	S 4	P
TANA379.8	S 4	P
TANA382.5	V	V
TANA386.0	F	P
TANA404.0		P
TANA408.0	F	P
TANA413.0		L
TANA414.5	S 3	V
TANA427.0	S 3	P
TANA430.7	S 3	P
TANA436.5	S 2	P
TANA438.4	L	P
TANA442.7	L	P
TANA460.0	F	L
TANA543.8	V	V
TANA550.0	S 3	P
TANA553.2		P
TANA586.0	S 3	P
TANA610.0	S U	P
TOTALS		
L (Lone adult)	3	6
F (Failed pair)	8	
S (Successful pair)	26	
P (Pair of adults in May)		27
Number of young	71	

Table 5 Historical occupancy and productivity of peregrine falcons, Tanana River, Alaska, 1968–1996[a]

	Occupancy			Productivity		
Year	Lone Adults	Total Pairs	Successful Pairs	Number of Young	Young Per Total Pair	Young Per Successful Pair
1968	0	12	11	23	1.92	2.09
1970	0	6	6	16	2.67	2.67
1971	0	4	3	9	2.25	3.00
1972	0	4	3	7	1.75	2.33
1973	0	4	4	8	2.00	2.00
1974	0	2	1	1	0.50	1.00
1975	1	2	0	0	0	--
1976	2	0	0	--	--	--
1977	0	3	1	1	0.33	1.00
1978	0	4	3	6	1.50	2.00
1979	3	3	2	4	1.33	2.00
1980	0	4	2	5	1.25	2.50
1981	0	5	5	12	2.40	2.40
1982	0	5	3	8	1.60	2.67
1983	0	5	4	11	2.20	2.75
1984	1	4	2	4	1.00	2.00
1985	0	4	3	5	1.25	1.67
1986	2	5	4	12	2.40	3.00
1987	0	8	5	10	1.25	2.00
1988	1	12	9	16	1.33	1.78
1989	0	15	11	29	1.93	2.64
1990	3	15	9	29	1.93	3.22
1991	0	20	16	38	1.90	2.38
1992	3	25	16	38	1.56	2.44
1993	1	26	19	62	2.38	3.26
1994	1	27	24	74	2.74	3.08
1995	3	34	26	71	2.09	2.73
1996	7	27	U[b]	U	U	U

[a] Data for 1968–1978 from a review by Roseneau et al. 1981. Data for 1979–1990 from US Fish and Wildlife Service, Endangered Species, Fairbanks, Alaska unpublished summaries. Data for 1991–1994 from Bente and Wright 1992, 1993, 1994, and 1995.
[b] U = unknown, no second survey